

CLAIMS

1. Capsule for two or more components of a material which are to be mixed together, comprising:

- a cartridge comprising an outlet, a first component chamber for containing a first component, and a second component chamber for containing a second component, the two chambers opening into the outlet; and
- a piston which at least with its front end sits in the cartridge, lies with its rear end outside the component chambers and, when it is pushed forwards, presses the two components out of their component chambers.

2. Capsule for two or more components of a material which are to be mixed together, comprising:

- a cartridge comprising an outlet, a first component chamber for containing a first component, and a second component chamber for containing a second component, the two component chambers opening into the outlet;
- a first piston which at least with its front end sits in the first component chamber, and a second piston which at least with its front end sits in the second component chamber, which two pistons lie with their rear ends outside the component chambers and, when they are pushed forwards, press the two components out of their component chambers.

3. Capsule for two or more components of a material which are to be mixed together, comprising:

- a cartridge comprising an outlet, a first component chamber for containing a first component, and a second component chamber for containing a second component, the two component chambers opening into the outlet; and

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- each of the two component chambers being at least partially delimited by a foil.

4. Capsule for two or more components of a material which are to be mixed together, comprising:

- 5 - a cartridge comprising a first component chamber for containing a first component and a second component chamber for containing a second component;
- a housing comprising an outlet and a cartridge chamber for holding the cartridge, the cartridge chamber being connected to the outlet;
- 10 - a first piston for movement within the first component chamber, and a second piston for movement within the second component chamber.

5. Capsule for two or more components of a material which are to be mixed together, comprising:

- 15 - a first cartridge comprising a first component chamber for containing a first component, and a second cartridge comprising a second component chamber for containing a second component;
- a housing comprising an outlet and a cartridge chamber for holding the cartridges, the cartridge chamber being connected to the outlet;
- 20 - a first piston for movement within the first component chamber, and a second piston for movement within the second component chamber.

6. Capsule for two or more components of a material which are to be mixed together, comprising:

- 25 - a first cartridge comprising a first component chamber for containing a first component, and a second cartridge comprising a second component chamber for containing a second component;
- a housing comprising an outlet, a first cartridge chamber for holding the first cartridge, and a second cartridge chamber for holding the

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second cartridge, the first and second cartridge chambers being connected to the outlet;

- a first piston for movement within the first component chamber, and a second piston for movement within the second component chamber.

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7. Capsule according to any of the preceding claims, wherein each of the two component chambers is separated from the rest of the interior of the cartridge by a flexible partition wall.

8. Capsule according to any of the preceding claims, wherein a common partition wall separates the two component chambers from one another.

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9. Capsule according to any of the preceding claims, wherein the partition wall is secured or fixed at least with part of its edge on the cartridge.

10. Capsule according to any of the preceding claims, wherein the partition wall is secured or fixed with the rear part of its edge on the front end of the piston.

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11. Capsule according to any of the preceding claims, wherein:

- the cartridge is divided in the axial direction into two shells for receiving the two components;
- each of the two shells is closed off by a foil.

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12. Capsule according to any of the preceding claims, wherein the two shells are connected to any another in a foldable manner at two adjoining edges.

13. Capsule according to any of the preceding claims, wherein the two shells are closed off by a common foil and are connected to one another in a foldable manner.

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14. Capsule according to any of the preceding claims, wherein each of the two component chambers is separated from the rest of the interior of the cartridge by a rigid partition wall.

5 15. Capsule according to any of the preceding claims, wherein a common partition wall separates the two component chambers from one another.

16. Capsule according to any of the preceding claims, wherein the partition wall is secured or fixed at least with part of its edge on the cartridge.

10 17. Capsule according to any of the preceding claims, wherein the rear end of the partition wall bears laterally on the allocated piston.

18. Capsule according to any of the preceding claims, wherein the two pistons are connected fixedly to one another.

19. Capsule according to any of the preceding claims, wherein:

15 - each component chamber is closed off at its rear end by a sealing foil; and

- each piston lies with its front end behind the outer surface of the allocated sealing foil.

20 20. Capsule according to any of the preceding claims, wherein the sealing foil and the allocated piston are configured in such a way that the piston, when advanced into the component chamber, pierces the sealing foil about its entire circumference.

25 21. Capsule according to any of the preceding claims, wherein the sealing foil and the allocated piston are configured in such a way that the piston, when advanced into the component chamber, pierces the sealing foil only in the area of the cartridge wall.

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22. Capsule according to any of the preceding claims, wherein the sealing foil has a predetermined break point in the area of the cartridge wall and/or the allocated piston has a piercing tip or piercing edge in the area of the cartridge wall.

5 23. Capsule according to any of the preceding claims, wherein:

- the cartridge has an interior with a stepped diameter, the front area being narrower than the rear area;
- the component chambers are arranged in the front area; and
- the sealing foil is secured or fixed on the circumferential step surface and closes off the rear openings of the component chambers.

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24. Capsule according to any of the preceding claims, wherein each component chamber is closed off at its front end by a sealing foil.

25. Capsule according to any of the preceding claims, wherein:

- a first foil at least partially delimits the first component chamber and separates it from the rest of the interior of the cartridge; and
- a second foil at least partially delimits the second component chamber and separates it from the rest of the interior of the cartridge.

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26. Capsule according to any of the preceding claims, wherein:

- a common foil at least partially delimits each of the two component chambers and separates them from one another;
- the common foil separates the first component chamber from the rest of the interior of the cartridge; and
- a closure means or a closure seals the second component chamber off from the outside.

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25 27. Capsule according to any of the preceding claims, wherein the closure means or the closure is a sealing foil.

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28. Capsule according to any of the preceding claims, wherein a piston sits at least with its front end in the cartridge, lies with its rear end outside the component chambers and, when it is pushed forwards, presses the two components out of their component chambers.

5 29. Capsule according to any of the preceding claims, wherein the foil is designed as a leaf and is secured or fixed with its edge on the cartridge.

30. Capsule according to any of the preceding claims, wherein the foil is designed as a pouch and its edge surrounds the outlet opening.

10 31. Capsule according to any of the preceding claims, wherein the pouch is secured or fixed with at least part of its outer surface on the inner face of the cartridge.

32. Capsule according to any of the preceding claims, wherein the foil is secured or fixed on the front end of the piston.

15 33. Capsule according to any of the preceding claims, wherein a sealing foil closes off the rear opening of the cartridge.

34. Capsule according to any of the preceding claims, wherein the sealing foil is designed as a leaf, is secured or fixed with its edge on the edge of the rear opening of the cartridge, and covers the rear ends of the pistons.

20 35. Capsule according to any of the preceding claims, wherein the sealing foil is designed as a ring, preferably as a circular ring, or as the shell of a truncated cone or as the shell of a spherical layer, is secured or fixed with its outer edge on the edge of the rear opening of the cartridge, and is secured or fixed with its inner edge on the shell and/or rear end of the piston.

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36. Capsule according to any of the preceding claims, wherein a cannula, in which a mixer is arranged, is mounted on the outlet of the cartridge.

5 37. Capsule according to any of the preceding claims, wherein the outlet of the cartridge is provided with means which are used for attachment of a cannula in which a mixer is arranged.

38. Capsule according to any of the preceding claims, wherein the cannula, in a first position, closes off the outlet of the cartridge and, in a second position, is connected to the outlet of the cartridge.

10 39. Capsule according to any of the preceding claims, wherein the cannula is mounted pivotably and/or displaceably on the cartridge.

40. Capsule according to any of the preceding claims, wherein the cannula is mounted with a press fit on the cartridge.

15 41. Capsule according to any of the preceding claims, wherein the outlet of the cartridge is closed off by a stopper.

42. Capsule according to any of the preceding claims, wherein the stopper is connected fixedly to the mixer.

43. Capsule according to any of the preceding claims, wherein the centre axis of the capsule and of the cannula is curved.

20 44. Capsule according to any of the preceding claims, wherein:

- the cartridge has an interior with a stepped diameter, the front area being wider than the rear area;
- the component chambers are arranged in the front area; and
- the piston has a shell matching the stepped interior and sits with its front end in the front area and with its rear end in the rear area.

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45. Capsule according to any of the preceding claims, wherein the cartridge has a front opening which is closed off by a cap in which the cannula is mounted.

5 46. Capsule according to any of the preceding claims, wherein the capsule has means which are used for coupling the capsule to an applicator having a single plunger which is advanced when the applicator is actuated.

10 47. Capsule according to any of the preceding claims, wherein the two pistons sit with their rear ends in the cartridge when the piston has not yet been advanced or has been partially or completely advanced.

48. Capsule according to any of the preceding claims, wherein the cartridge is made from a different material than the housing.

49. Capsule according to any of the preceding claims, wherein the cartridge is made from a different material than the piston.

15 50. Capsule according to any of the preceding claims, wherein the housing is made from a different material than the piston.

51. Capsule according to any of the preceding claims, wherein the first piston is connected to or formed in one piece with the second piston.

20 52. Capsule according to any of the preceding claims, wherein at least one of the pistons is connected to or formed in one piece with at least one of the cartridges.

53. Capsule according to any of the preceding claims, wherein at least one of the component chambers has at least one opening closed by a seal.

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54. Capsule according to any of the preceding claims, wherein the seal is a film attached to the cartridge.

55. Capsule according to any of the preceding claims, wherein the seal is formed in one piece with the cartridge.

5 56. Capsule according to any of the preceding claims, wherein the seal is a membrane formed in one piece with the cartridge.

57. Capsule according to any of the preceding claims, comprising a piercing member for piercing the seal.

10 58. Capsule according to any of the preceding claims, wherein the first component chamber has a rear opening closed by the first piston.

59. Capsule according to any of the preceding claims, wherein:

- the first piston has a front end;
- the first component chamber has a rear opening for receiving the first piston;

15 - the front end is connected to or formed in one piece with a part of the cartridge surrounding the rear opening and closes the rear opening.

60. Capsule according to any of the preceding claims, wherein the first component chamber has a rear section holding a plug.

20 61. Capsule according to any of the preceding claims, wherein the plug is formed in one piece with a part of the cartridge surrounding the rear section.

62. Capsule according to any of the preceding claims, wherein the plug is made from a different material than the cartridge.

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63. Capsule according to any of the preceding claims, wherein the plug comprises a through hole running from the outside to the inside of the first component chamber.

64. Capsule according to any of the preceding claims, wherein:

- 5 - the plug has a rear face;
- the plug comprises a filling nipple protruding from the rear face;
- the through hole runs through the filling nipple.

65. Capsule according to any of the preceding claims, comprising a stopper for closing the through hole.

10 66. Capsule according to any of the preceding claims, wherein the plug has a front face with a funnel shaped surface leading to the through hole.

67. Capsule according to any of the preceding claims, wherein:

- the plug is made from an elastic material;
- the through hole is collapsed at least when the plug sits in the first
- 15 component chamber.

68. Capsule according to any of the preceding claims, wherein:

- the cartridge comprises an outer wall with a cylindrical outer surface;
- the cartridge chamber comprises a cylindrical inner surface facing the outer surface when the cartridge is held in the cartridge chamber;
- a tongue and groove joint is provided on the outer surface and the inner surface.

20 69. Capsule according to any of the preceding claims, wherein:

- 25 - the cartridge comprises a partition wall between the first component chamber and the second component chamber;

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- the groove of the tongue and groove joint runs along the line where the partition wall meets the outer wall.

70. Capsule according to any of the preceding claims, wherein the piston is a ball.

5 71. Capsule according to any of the preceding claims, wherein the capsule is adapted for use with an applicator having a single plunger.

10 72. Capsule according to any of the preceding claims, comprising at least two pistons for movement within respective component chambers, wherein each piston has a rear face, wherein the rear faces are adapted to be simultaneously in contact with a single plunger.

73. Capsule according to any of the preceding claims, wherein the cartridge or the housing comprises connector elements fitting to corresponding connector elements of an applicator.

15 74. Capsule according to any of the preceding claims, wherein each component chamber contains the respective component.

75. Method for dispensing a material consisting of two or more components which are to be mixed together, said method comprising steps in which:

- a) a capsule according to any of the preceding claims is produced, each chamber containing the allocated component;
- b) if necessary, a cannula in which a mixer is arranged is attached to the outlet of the cartridge;
- c) an applicator is produced, having:
 - a plunger which is advanced when the applicator is actuated, and
 - means which are used for attaching the capsule in such a way that the plunger can be pushed into the cartridge from the rear;
- d) the capsule is attached to the applicator; and

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e) the applicator is actuated in such a way that the plunger is pushed forwards in the cartridge.

76. Method for producing a capsule according to any of the preceding claims, wherein each component chamber contains the respective component, said method comprising steps in which:

- a) the cartridge is produced;
- b) the pistons are produced;
- c) each component chamber is filled with the respective component;
- d) the front portion of each component chamber is closed;
- e) a fluid sealant, preferably a hotmelt is filled through the rear opening of each component chamber onto the component already contained therein;
- f) each piston is fitted into the rear opening of each component chamber until its front end contacts the sealant or immerses into the still soft sealant.

77. Use of a capsule each chamber containing the allocated component, with an applicator having:

- a plunger which is advanced when the applicator is actuated, and
- means which are used for coupling the capsule in such a way that the plunger can be pushed into the cartridge from the rear.

78. Use of a capsule according to any of the preceding claims for a material with low to medium viscosity, preferably for a dental impression material and a dental temporary restoration material.

79. Use of a capsule according to any of the preceding claims for a material with high viscosity, preferably for a dental filler material.

80. Use of a capsule according to any of the preceding claims for a material consisting of liquid and/or pasty components.